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Internal Migration in Ghana

Determinants and Welfare Impacts

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Abstract

Using a recently compiled dataset on migration and remittances in Ghana, this paper estimates the determinants of an individual's likelihood to be an internal migrant and the relationship between internal migration and welfare. The analysis finds that the likelihood to migrate is determined by a combination of individual (pull) and community-level (push) characteristics. The probability of migration is higher for younger and more educated individuals, but communities with higher levels of literacy, higher rates of subsidized medical care, and better access to water and sanitation are less likely to produce migrants. The analysis finds that households with migrants tend to be better off than similar households without migrants, even after controlling for the fact that households with migrants are a non-random sample of Ghanaians. However, the positive relationship is only true for households with at least one migrant in urban areas; the welfare of households with migrants exclusively in rural areas is no different from households without any migrants.

This paper—a product of the West Africa Poverty Reduction and Economic Management Unit, Africa Region—is part of a larger effort in the department to produce policy-relevant research which addresses key development issues in West Africa. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at dmedvedev@worldbank.org.

Internal Migration in Ghana: Determinants and Welfare Impacts

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1. Introduction

Migration is very common in Ghana, with at least one migrant in more than 43 percent of all households in 2005/06. Studies of migration in Ghana—exploring its patterns, determinants, and impacts on welfare and poverty—date back to the 1960s. Early contributions by Beals et al (1976) and Caldwell (1968), relying on census and survey data, respectively, found a negative effect of origin locality's income on rural-urban migration (Beals et al, 1976), but a positive effect of a household's own income on the probability to migrate (Caldwell, 1968). Other important determinants of the likelihood to migrate noted by Caldwell (1968) include presence of friends or relatives in the destination locality, i.e., migration networks (also observed by Tutu, 1995), gender, with males more likely to migrate than females, age, with younger persons more likely to migrate (also confirmed by Tutu, 1995), and household size, with larger households with producing a greater number of migrants. The findings regarding the relationship between education and the probability to migrate have been conflicting, with Beals et al (1976) estimating a negative relationship while Caldwell (1968) reported a positive association. Furthermore, drawing on the 1991 Migration Research Study, Gbortsu (1995) reports that the share of migrants with formal education exceeds the share of non-migrants only for tertiary degrees and above.

With regard to the impact of internal migration on household income and consumption, Tutu (1995)—drawing on the 1991 Ghana Migration Survey—found that the migration-induced decline in household labor supply tended to be compensated by the extra effort put forth by the remaining household members, such that 52 percent of households interviewed reported no loss in short-run household output and no expected decrease in the long-run output. Drawing on the same dataset, Asante (1995) highlighted the importance of remittances sent by migrants in the urban areas to the rural origin communities in raising the welfare of households sending migrants and narrowing the welfare gap between rural and urban communities.

More recently, econometric efforts at establishing a relationship between migration and household welfare generally found that migration tends to increase the welfare of sending households. Using data from the 1991/92 and 1998/99 rounds of the Ghana Living Standards Survey (GLSS), Litchfield and Waddington (2003) found that migrants have a higher standard of living than non-migrants. However, the migration premium halved between 1991/92 and 1998/99 and the difference was not statistically significant when the analysis was expanded to non-monetary welfare indicators. Furthermore, Litchfield and Waddington (2003) found no significant difference in the probability of being poor between migrants and non-migrants.

While the Litchfield and Waddington (2003) study did not control for the selection bias in the migration decision, studies by Tsegai (2005) and Boakye-Yiadom (2008) took explicit account of the non-random selection of migrants. Tsegai (2005) found that incomes of migrant households are higher than those of otherwise comparable non-migrant households, but the coverage of his study was limited to the Volta Basin. Boakye-Yiadom (2008), using data from the 1998/99 round of GLSS (GLLS 4), found that, although some rural-urban migrants experienced welfare losses, on average, rural-urban migration significantly enhanced the welfare of internal migrants.

This paper adds to the Ghana migration literature summarized above by offering a novel empirical assessment of the characteristics of Ghanaian migrants, the determinants of migration, and its impact on household welfare by drawing on a recently-assembled, nationally-representative sample of Ghanaian households. The main finding of the paper is that migration is a response to opportunities available to individuals and constraints faced by communities: the incentive to migrate is greatest for more educated individuals from communities with reduced access to education and health services. Households with migrants are better off than households without migrants, but only if the households send migrants to urban areas and are in turn more likely to receive remittances and in larger amounts.

The remainder of this paper is organized as follows: Section 2 describes the dataset and provides some descriptive statistics on Ghanaian migrants, Section 3 presents an analysis of migration determinants, Section 4 assesses the impact of migration on welfare, and Section 5 concludes.

2. Profile of Ghanaian migrants

The analysis in this paper is undertaken with a nationally-representative sample of 4,000 Ghanaian households, taken from the 8,687 households which participated in the 2005/06 round of Ghana Living Standards Survey (GLSS 5). 13 households were dropped due to insufficient data, resulting in the final sample of 3,987 households. The survey was administered from September 2005 to September 2006, and the migration and remittances module contained 36 questions about the identity and characteristics of migrants, as well as the amount, frequency, and use of remittances sent back by these migrants. Combining the migration and remittances module with the general GLSS5 survey, it is possible to identify three types of individuals in the data (see Figure 1 for contributions of each group to the population):

- *Non-migrants*: individuals who were present at the time of the survey and who, if ever away from the household, came back more than five years ago and have not left the household since that time. For these individuals, information is available only from the general part of the survey.
- *Return migrants*: individuals who were away from the household for some time in the last five years but have since returned to the household. For return migrants, information is available both from the migration and remittance module (e.g., duration of migration, amount of remittances sent, education and occupation before migration, etc.) as well as from the general part of the survey (because they were interviewed for the general survey as any other household member). However, it is not guaranteed that the return migrant him/herself answered the questions in the migration and remittances module.
- *Current migrants*: individuals who were away from the household at the time of the survey. For current migrants, the only information available is that recalled by the interviewed remaining household members because the current migrants themselves were never interviewed. It is possible that these current migrants were interviewed by GLSS staff while in their destination communities, but even if so, they would not be captured as migrants in this dataset.[1]

[1] This represents a major qualification to the findings of this paper, as the second-hand information relayed by remaining household members may be incomplete, inaccurate, or out-of-date. The reliance on remaining

More than 80 percent of Ghanaian migrants stay in Ghana and among them, 70 percent go to urban areas.[2] The latter is a higher share than reported by previous studies but consistent with the overall pattern in the literature which showed increasing attractiveness of urban areas as migrant destinations over time (Ghana Statistical Service 2000), (Batse 1995). The greater Accra and Ashanti regions attract more than half of all internal migrants and migrants make up a substantial share of the population in these regions.[3] Consistent with previous studies (e.g., Tutu 1995), the southern regions of Ghana—Western, Central, Eastern, greater Accra, Volta, and Ashanti—are the destinations for 88 percent of all internal migrants, while the Northern and the two Upper regions together account for only 5 percent of the total (Figure 2, top left).

The same southern regions account for 70 percent of the country's population, and migrants have become prominent members of the population in these localities. In Ashanti and Western regions, migrants account for more than 10 percent of the region's population, while more than 18 percent of the population in Accra is accounted for by migrants (Figure 2, bottom left). If the sample is restricted to individuals 15 years of age or older, these shares rise even more, with 26 percent of the population in Accra and 24 percent of the population in the Ashanti region accounted for by migrants.

More than two-thirds of internal migrants come from the relatively better off southern regions (Ashanti, Central, Eastern, and greater Accra). Although the common perception in Ghana is that a large number of migrants come from the North, the Upper East, Upper West, and Northern regions account for only 10 percent of all internal migrants (Figure 2, top right). This, combined with the fact that most migrants tend to stay within their own region, suggests that the costs of moving—both direct travel costs and the costs of locating and joining a migrant network—represent important barriers to labor mobility in Ghana.[4] This is also consistent with previous evidence which points to distance as a strong deterrent to internal migration in Ghana (Beals, Levy and Moses 1967), (Caldwell 1968).

Even after taking population size into account, northern regions produce migrants at a much lower rate than southern regions. Migrants in the Upper East and Northern regions make up just 3 percent of their populations, while Upper West has a somewhat higher

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household members for information on migrants also implies that migration of entire households is not captured in the data, although qualitative studies indicate that such migration patterns are very rare (Participatory Development Associates 2009).

[2] It is important to note that the urban or rural classification of migrant's destination is reported by households, whereas the urban/rural classification of origin communities is done by survey administrators (Ghana Statistical Service). Therefore, the two definitions may not always be consistent.

[3] The discussion in this and the following paragraphs on migrant destinations must be heavily qualified due to data limitations. The interviewed families knew the location of the migrant only in 61 percent of all cases, and there is a substantial regional variation underlying that average. However, there is no clear regional pattern in the knowledge of the migrant's location. Across the three agro-ecological zones, the location of the migrant was known 60 percent of the time in the coastal zone, 63 percent of the time in the forest zone, and 56 percent of the time in the savannah. The likelihood of knowing a migrant's location also does not appear to be correlated with welfare: there is no clear pattern in knowing the location across welfare deciles, although households in the two bottom deciles are the most likely to know the location of their migrant members.

[4] Migration networks in Ghana have been found to be a significant determinant of the likelihood of receiving remittances (Adams, Cuecuecha and Page 2008), which is one way of measuring success of migration.

migration rate of 8 percent (Figure 2, bottom right). However, this is much lower than the double-digit migration rates of the Volta, Central, and Ashanti regions. This suggests that internal migration in Ghana, whether in relative or absolute terms, is primarily a southern region phenomenon. These results are at odds with the commonly held views of Ghanaian migration, which posit that migrants mostly come from the north of Ghana and settle in the south.

Even though migrants tend to come from more urbanized regions, within these regions most migrants originate from rural areas. While 64 percent of the Ghanaian population is rural, 75 percent of migrants come from rural areas. Coming from a rural area also increases the chances that the migrant will go to a rural area, although urban destinations always dominate in absolute terms. Among migrants from rural areas, 33 percent go to another rural location, while less than 17 percent of migrants from urban areas do go to a rural area.[5] This pattern is similar for both men and women, with no substantial differences.

On average, households with migrants have 2 members currently away, but the distribution is highly skewed to the right with the median of 1 and the maximum of 13. The more migrants a household has, the more likely these migrants are to stay away longer and go to urban areas—pointing to the existence and importance of migrant networks. Compared to the average migration duration of 8 years for the entire sample, migrants from households with more than two migrants tend to be away for 9 years, and migrants from household with five or more migrants stay away an average of 10 years. Similarly, the likelihood that a migrant ends up in an urban area increases from 67 percent for households with one or two migrants to 71 percent for households with three or four migrants to 79 percent when five or more household members are away.

Compared to Ghanaians who never migrated, internal migrants are substantially younger, more likely to be male, and less educated. In most cases, differences between current and return migrants with respect to their age, gender, and educational attainments are not significant, and even when they are, these differences are not meaningfully large. However, the same differences between migrants and non-migrants are much more pronounced (Table 1). Consistent with existing evidence (Caldwell 1968), migrants are much more likely to be male: the male-to-female ratio for non-migrants 15 years of age or older of is 0.88 vs. 1.20 for migrants. On average, migrants are five years younger than non-migrants—consistent with evidence in (Caldwell 1968) and (Tutu 1995)—and they are significantly more likely to stop their education after completing primary school, rather than continuing on to secondary and tertiary degrees (Table 1).[6]

The primary motivation for Ghanaian migrants is to find work, primarily in the manufacturing sector or in sales, with education and marriage a distant second and third. Taking both return and current migrants into account, working or looking for work is the main reason for migration for more than 47 percent of all migrants. When only migrants 15 years of age or older are taken into account, this share rises to 49 percent. Education

[5] Just under 4 percent of Ghanaian internal migrants are urban-to-rural migrants. Although this share may seem high, it is actually below those reported in earlier studies of internal migration in Ghana (Batse 1995).

[6] Of course, this do not establish a causal link between lower education levels and the likelihood to migrate: migrants could be coming from communities with reduced access to education services, from social groups which are traditionally less likely to send children to school, or the less-educated may be self-selecting into the migrant pool. However, to the extent that higher educational attainment is correlated with increased earnings, Ghanaian migrants appear to be at a disadvantage relative to non-migrants.

as the primary motivation for migration accounts for another 16.5 percent of all migrants, while migrating for/due to marriage counts for an additional 12 percent (18 percent when only those 15 and older are considered).

Only 36 percent of migrants send remittances. This low "remittance success" ratio suggests that most households probably overestimate the likelihood that a migrant will remit and the potential gain to household welfare from migration. It could be that some of the non-remitting migrants simply have not had an opportunity to find employment that allows them to earn enough to be able to remit or must first pay back the loan they received to enable them to migrate, but reducing the sample to migrants who have been away for at least two (or three or four) years hardly changes the share for current migrants.[7] However, migrants in the south of Ghana are much more likely to remit and remit much more on per capita terms than migrants in the north of Ghana. Therefore, it appears that the southern regions are much more effective at attracting migrants who are relatively more successful at remitting, be it due to the qualities of the migrants themselves and/or to the larger set of opportunities offered by these regions.

When migrants do send remittances, they contribute nearly 11 percent to total household income. There is also a significant positive relationship between household welfare and the amount of remittances received (Figure 3), which shows that poorer households are less "effective" at producing migrants who are able to make a larger contribution to household welfare.

3. Determinants of the migration decision

This section estimates an individual's likelihood to migrate as a function of a combination of his or her personal characteristics as well as the characteristics of their household, community, and region. Define the probability of migration as follows:

$$(1) \quad P(y_i = 1|\mathrm{X}) = P(y_i^* > 0|\mathrm{X}) = P(\epsilon_i > -\mathrm{X}\beta|\mathrm{X}) = \Phi(\mathrm{X}\beta) = \Phi(\beta_0 + \mathrm{X}_1\beta_1 + \mathrm{X}_2\beta_2 + \mathrm{X}_3\beta_3 + \mathrm{X}_4\beta_4)$$

where y_i is the 0-1 outcome with 1 corresponding to an individual being a current internal migrant and 0 corresponding to a non-migrant or an internal return migrant, y_i^* is the latent variable modeled under linear model assumptions, $\epsilon_i \sim N(0,1)$ with Φ as the normal cdf, and $(\mathrm{X}_1 - \mathrm{X}_4)$ correspond to sets of individual, households, community, and regional characteristics, respectively.[8] The model is estimated with a weighted probit corrected for survey design.[9]

The estimation sample is restricted to Ghanaians 15 years of age or older who are not international migrants, and the coefficients are shown as marginal changes in the probability of migration for continuous variables and the discrete change in the probability for dummy variables. The first set of estimates (column 1 of Table 2) contains the full set of characteristics $(\mathrm{X}_1 - \mathrm{X}_4)$ described above. The second set of estimates

[7] The same share actually falls for return migrants when two, three, and four year cut-offs are used. However, a probit test reveals no significant negative relationship between duration of migration and likelihood to remit for return migrants.

[8] This paper defines community as a single GLSS5 cluster. Within each of these communities, the number of households (randomly) sampled varies from 12 to 15.

[9] The estimates are probability-weighted with survey sampling weights and standard errors are adjusted for clustering at the PSU level and stratification at the regional level.

(column 2 of Table 2) controls for endogeneity of some regressors by leaving only exogenous variables on the right-hand side (X_1, X_3, X_4). Model (3) is a minor elaboration on specification (2).

Person's age, civil status, and educational attainment are important determinants of the migration decision, while gender is not. The age profile of internal migrants is upward-sloping, but it increases at a decreasing rate. The probability of being a migrant rises until a person turns 36 years old, and decreases thereafter.[10] Somewhat at odds with the previous literature which found that unmarried are more likely to migrate (Tutu 1995), the current estimates indicate a positive association between being a migrant and being married. However, despite there being more male migrants than female, gender does not appear to be a significant predictor of the probability to migrate once other factors are taken into account. The relationship between education and the likelihood to migrate is also somewhat different than implied by a simple tabulation. Even though, as shown in Table 1, migrants have lower educational attainment on average, higher educational attainment is correlated with increased probability to migrate once other controls are added to the equation. Taking some classes at the secondary level leads to a roughly the same probability of being a migrant as only completing primary, but completing secondary or tertiary education significantly raise the probability of migrating. These results are in line with existing studies of the relationship between education and migration in Ghana, which found a positive but non-linear association between the two (Caldwell 1968; Gbortsu 1995).

Important household-level determinants of migration include the gender, age, and education level of household head, male-to-female, youth, and elderly dependency ratios, home ownership, and household size. Individuals are more likely to migrate if the head of the household is female and if the head is younger. However, the direction of causality is not clear here: both the age and the gender finding could be explained by the "real" head leaving to become a migrant and the spouse becoming the new household head. At the same time, it is true that households headed by widows—in which case the female headship is exogenous—tend to send more migrants than other households, suggesting that the causality is not always reversed. Migrants are less likely to come from households with a more educated head, which may serve as a proxy for opportunities available to the migrant at home: the more educated the head, the better-off the household, which reduces the economic incentives to migrate. Even if headship is endogenous, the education link may still be valid since education is likely to be similar within a family and among household members, the more educated are more likely to migrate (based on individual determinants above).

Migrants are less likely to come from households who own their homes, but it could also be that migrant's families are more likely to be able to purchase or build a home using remittance income. The ratio of males to females in the household and household size (including the migrant) are positively correlated with the likelihood of migration: both are likely an indicator of household-level labor abundance. In line with other studies, the under-15 dependency ratio is negatively correlated with the probability to migrate, which reflects the need of parents and other family members to help with raising the children (see Tutu 1995). On the other hand, the over-65 dependency ratio is

[10] This is not necessarily inconsistent with Table 1 because the averages reported in that table apply to all migrants, while the selection model is estimated only for migrants 15 years of age and older.

positively correlated with the likelihood to migrate. In contrast to the needs of young children, the needs of the elderly are more likely to be financial and thus encourage migration. In addition, the "availability" of grandparents to help raise the children may enable the parents to become migrants.

Community-level variables have been added to the selection model to estimate the importance of push factors in motivating migration in Ghana. Because community-level variables are common to migrants and non-migrants alike, their impact on the migration outcome can be interpreted as a "push" factor of migration. Another way to see these variables as push factors is to note that they, unlike individual characteristics such as age, education, and experience, are unlikely to influence migrant earnings in the destination region and therefore cannot provide the "pull" of an expectation of higher wages. The community-level variables in Table 2 have been constructed using the literacy (*lit_clusH*), health insurance coverage (*pay_clusH*), and access to water (*wtr_clusH*) and sanitation (*sni_clusH*) outcome indicators from the full GLSS5 sample.[11] All of them have been calculated as excluded means, i.e. the community average excluding the household for which the mean is calculated, to remove the influence of the household on the average. Furthermore, although the indicators measure outcomes rather than access to services, a link between these outcomes and community service provision has been established using the rural community survey module of GLSS5. In particular, the presence of a literacy program has been confirmed as an important determinant of community literacy rates, and the primary source of water in the community is a statistically significant determinant of the average level of access to an improved water source.

Communities with higher levels of literacy, higher rates of subsidized medical care, and better access to water and sanitation are less likely to produce migrants. In all specifications, the literacy and health variables are significant and correctly signed, indicating that lack of access to these services increases the likelihood of migration. The average level of education in a community is also a potentially important determinant of migration, but community education and literacy are highly collinear in the GLSS data and only one variable is a significant determinant of migration when both are present. Access to improved drinking water sources and improved sanitation facilities in the origin communities is correctly signed but insignificant, but only because availability of these services is highly correlated with community literacy and health outturns. If the latter variables are removed from the regression (column 3 of Table 2), both the water and sanitation variables become significant. Interestingly, once these community-level characteristics are controlled for, the rural dummy is no longer significant in explaining the likelihood of migration. Another potentially important community variable for determining migration—distance to nearest market—was not significant in any of the specifications, but this could be because this variable was only available for rural communities.

[11] Literacy is defined as one's ability to read a sentence in either English or at least one of the Ghanaian languages. Health insurance coverage is defined as 1 if an employer, the government, or a health insurer pays the greatest portion of a patient's medical expenses, and 0 otherwise. Access to improved water is defined as having access to pipe-borne water. Access to improved sanitation is defined as access to a flush toilet or KVIP (Ghana Water Directorate 2008).

Regional-level variables also matter for determining the likelihood to migrate. The coefficients on the regional dummy variables largely line up with Figure 2. Because the distribution of ethnic groups in Ghana closely follows the regional borders, the regional effects can to a large extent also be interpreted as the migration impact of membership in an ethnic group. In fact, once regional effects are controlled for, the ethnic dummies are largely insignificant.[12] As before, the significance of regional variables in determining the likelihood of an individual's decision to migrate confirms that push factors, along with pull factors, play an important role in shaping the pattern of internal migration in Ghana.

A key concern with the results presented so far is the potential endogeneity of the explanatory variables. Many of these concerns have already been mentioned in the discussion of individual model coefficients, such as the endogeneity of the age, gender, and education of the head. Similar reasoning can be applied to the male-female ratio, household size, and the number of dependents; in fact, any household-level variable measured after the migrant has been away for some time is likely to be affected by the migrant's absence. The same concerns do not apply, however, to the characteristics of the migrant him/herself because the household was asked to characterize the migrant before he or she left the household. Therefore, individual-level determinants are exogenous to the migration decision. Regional dummies are clearly exogenous as well, and the community-level variables are unlikely to be endogenous as they cannot be affected by the actions of the migrant for whom they are measured (recall they are calculated as excluded means). Still, to confirm the exogeneity of the community variables, they have been instrumented by the average education of the previous/older generation in the community, with results confirming that, for each variable, estimating a two-stage IV probit is inefficient relative to the single-stage estimates assuming exogeneity.[13]

The results of estimating an 'exogenous-only' model do not differ qualitatively from the earlier discussion. Because no suitable instruments could be found for household-level characteristics, all these variables were dropped when estimating an 'exogenous' model. However, as shown by the results in column (2) of Table 2, all of the variables common across specifications retain their significance and sign, and the estimated coefficients are reasonably close in value.

These findings indicate that migration is an individual response to the inequality of opportunities in Ghana, with disadvantaged communities more likely to produce migrants. According to estimates in Table 2, internal migrants in Ghana are "the best of the worst": the younger and more educated exit the more disadvantaged communities. The relative importance of push and pull factors at the regional level is shown in Figure 5, which decomposes the latent variable y_i^* of the estimated probability to migrate (based on coefficient estimates of column 2 in Table 2) into contributions from individual pull factors - from education and other individual determinants (age, gender, and marital

[12] Conversely, for a couple of ethnic groups the ethnic dummies are significant, but the regional dummies where these groups dominate become insignificant.

[13] The endogeneity tests confirmed that the correlation between the error terms in the first and second stage was insignificantly different from zero. Tests were done separately for each community variable, instrumenting each with education of mother and father of the household head, calculated as the excluded mean at the community level. Before testing for endogeneity, each community variable was regressed on the instruments to confirm that the instruments explain a significant portion of the variation in the dependent variable. With the exception of health insurance coverage, the adjusted R^2 in these regressions was between 21 and 47 percent.

status) - and community and regional push factors (access to community services and regional dummies), evaluated at the mean of each region. The figure shows that, for migrants from the relatively disadvantaged northern regions, the educational pull factors are less important than for migrants from other regions. At the same time, the community push factors contribute more to an individual's probability to migrate if that person is from the north of Ghana.[14]

4. Migration and household welfare

A household is likely to send a migrant when the expected value of the migrant's remittances exceeds that individual's net contribution to household welfare prior to migration. With perfect foresight, migration would always be welfare-enhancing: that is, a household would only send a migrant if the value of that migrant's marginal product net of his or her consumption is less than the received remittances. However, because received remittances can vary greatly from expected remittances, the *ex post* impact of migration on welfare may be positive or negative.

The impact of migration on welfare and poverty depends primarily on the likelihood, amount, and frequency of remittances sent back to the household by the migrant. Although there may be other channels through which migration affects poverty—reduced population pressure, increase in the average skill levels in the origin communities if migrants enhance their human capital while away—migration has an impact on welfare and poverty primarily through remittances.[15] In Ghana, however, the relationship between migration and remittances is complex, as documented in the existing literature (Adams, Cuecuecha and Page 2008).

Just 62 percent of Ghanaian households with migrants receive remittances; moreover, 49 percent of households who do not report having any migrants also receive remittances. Therefore, one can identify four distinct categories of Ghanaian households: those without any migrants or remittance income, those with migrants but no remittance income, those with migrants and remittance income, and those without any migrants but receiving remittances (Figure 4). The figure shows that among the four categories, households with migrants but no remittances are the worst off, as they bear the costs of lost earnings of household member(s) without the benefit of remittance income. However, among households with no migrants, those without remittances are in fact better off than those who receive remittances, suggesting that for the latter households remittances may be a result of greater needs.

Define the household welfare function as follows:

(2) $$y_i = \beta_0 + X_1\beta_1 + X_2\beta_2 + \delta m_i + \epsilon_i$$

[14] Because the estimated coefficients on the community push factors are negative, the contribution of these factors to an individual's likelihood to migrate will be higher in absolute terms for individuals from communities with better service delivery. Therefore, longer bars indicate that push factors are less important, while shorter bars indicate that these factors are more important.

[15] In the case of Ghana, there is limited evidence of overpopulation in the main sending regions; furthermore, the occupational data in the survey does not point to significant differences in the job profiles of return migrants relative to workers who never migrated.

where y_i is the log of household expenditure per adult equivalent (the same metric used to calculate the poverty incidence), X_1 is a set of household-level characteristics, X_2 is a set of regional dummies, and m_i is a dummy variable equal to 1 when the household contains at least one migrant and 0 otherwise. The parameter δ in equation (2) can be estimated by OLS without bias only if households with migrants are a random sample of all Ghanaian households. If that is not the case, the migration "premium" for household welfare is correctly estimated with a two-stage treatment effects estimator as follows:

$$(3) \qquad E(y_i|m_i = 1) - E(y_i|m_i = 0) = \delta + \rho\sigma_\epsilon \left[\frac{\phi_i(Z\gamma)}{\Phi_i(Z\gamma)\{1-\Phi_i(Z\gamma)\}}\right]$$

where ρ is the correlation term between the error terms of the first and second stage equations, σ_ϵ is the standard error of the outcome (second stage) regression, and the set of Z explanatory variables of the selection equation $P(m_i = 1|Z) = \Phi(Z\gamma)$ includes the full set of X characteristics as well as the migration rate at the district level—calculated as excluded mean for each household in the sample—which is the identifying variable in the first stage.

The regression results, shown in Table 3, are obtained with a two stage treatment effects estimator described above: the first stage (not shown) estimates the likelihood that a household has at least one migrant with a probit and the second stage uses these estimates to adjust for the selection bias. The statistical significance of the ρ coefficient measures the extent of the selection bias; because the estimates of ρ in Table 3 are significantly different from zero, the equation cannot be consistently estimated with OLS.

The relationship between household welfare and the control variables is consistent with other studies. Household welfare is higher when the head is younger, more educated, and self-employed, but is not significantly related to the gender of the head or his/her marital status. Having a larger household and a higher ration of children under 15 to overall household size (*dep_child*) is negatively associated with household welfare. Living in an urban area, owning a home, and owning land of greater value (*lland*) are all positive correlates of higher welfare, while farm ownership and welfare are negatively correlated. Even after controlling for all these characteristics, welfare exhibits a persistent regional bias, with per capita welfare in Upper East and Upper West regions significantly lower than in and around Accra. These results are consistent with other studies of determinants of household welfare in Ghana (Adams, Cuecuecha and Page 2008).

Households with at least one migrant have higher per capita welfare. Even after controlling for all other characteristics relevant to welfare, the dummy variable for a household having at least one internal migrant is positive and statistically significant. The estimated coefficient suggests that households with at least one migrant have an average per capita welfare which is 103 percent above the per capita welfare of households with no migrants.[16] Because the estimates are not obtained with panel data, these results do not prove that sending migrants increases household welfare as pre-migration welfare is not observed. However, to the extent that the set of right-hand side variables provides a fairly exhaustive list of other welfare determinants—and the selection bias is taken into account via a treatment effects estimator—the estimates in column (1) make a strong case for a positive relationship between migration and welfare.

[16] The semi-elasticity of a dummy variable coefficient in a log-level model is calculated as (e^{β}-1).

Additional estimates suggest that the *type* of migration matters for welfare: the positive migration-welfare link is driven entirely by households with at least one migrant in an urban area. Column (2) of Table 3 shows the results of estimating a treatment effects model where the treated variable is a household with at least one urban migrant. The estimated coefficient implies that households with urban migrants are more than 86 percent better off than other households in the sample. On the contrary, the estimates for households with only rural migrants in column (3) show that the impact of migration on welfare, although positive, is insignificantly different from zero.

Having at least one migrant in an urban area substantially enhances the likelihood that the sending household will receive remittances, while having only rural migrants does not have a significant impact. Columns (1)-(3) of Table 4 show the results of estimating the likelihood that a household will receive remittances as a function of the same characteristics determining household welfare. The estimates indicate that, all else being equal, households headed by males are less likely to receive remittances, which is consistent with anecdotal evidence that migrants are more likely to remit to female-headed households because women tend to use remittances in a more productive manner (e.g., spending on children rather than alcohol and/or tobacco). Larger households and those with more educated heads are less likely to receive remittances, while the youth dependency ratio does not appear to have a significant impact. Home ownership has a strong negative correlation with the probability of receiving remittances, while farm ownership has a significant positive association. Both of these are consistent with the migrant profile and the determinants of migration discussed in the earlier sections. Neither self-employment nor the value of land holdings significantly determines the likelihood to receive remittances, but urban households are less likely to receive them. Most importantly, having an internal migrant significantly enhances the probability that a household will receive remittances (column 1), but this result is driven entirely by urban migrants. Column (3) shows that having a rural migrant has no significant impact on the likelihood of receiving remittances, while column (2) indicates that having an urban migrant has a strong positive effect.

Households with at least one urban migrant can also expect to receive significantly larger amounts of remittances than other households. Columns (4)-(7) of Table 4 show the estimated determinants of the log of per capita remittances, adjusted by regional price differences. The findings are largely consistent with the logit estimates of columns (1)-(3). The statistically significant positive coefficient on the migration dummy (*mstatus*) in column (4) indicates that households with migrants are more likely to receive remittances than other households, but as before columns (5) and (6) show that this effect is due entirely to households with at least one urban migrant. Controlling for the potential selection bias in this equation—shown in column (7)—does not qualitatively change the findings, and the statistical insignificance of the ρ parameter suggests that selection is not a substantial problem for this equation.

5. Conclusions

This paper has relied on a recent questionnaire administered to a nationally representative sample of Ghanaian households to learn about the behavior of their migrant members. The findings must be qualified because the individuals currently away (current migrants) were never interviewed and everything learned about them was

through recall of remaining household members, although information was also available from individuals who left and came back during the past five years (return migrants).

The paper's results show that internal migration is determined by both pull and push factors and persons most likely to migrate are more educated individuals from communities with lower average levels of education (i.e., "the best of the worst"). Therefore, internal migration may widen spatial inequalities by lowering the concentration of more educated people of prime working age in the origin communities. On the other hand, any potential increase in spatial inequality due to internal migration can hardly be considered a worsening in inequality because it is an outcome of a welfare-maximizing decision by individuals and/or households.

Migration turns out to only be beneficial for a subset of Ghanaian households who send migrants to urban areas. Although the results stop short of establishing a direct causal relationship, they indicate that migrants from urban areas are more likely to send remittances and remit larger amounts, suggesting one channel which may explain the positive association between household welfare and migration to cities. Households who send migrants to rural areas also receive remittances, but it appears that in this case the remittance income is insufficient to compensate for the lost earnings of a migrant and household welfare decreases.

The differential impacts of migration to rural and urban areas may be due to qualitative differences between the two flows: for example, although two-thirds of all migrants move to urban areas, only 45 percent of all households with migrants have at least one urban migrant. This implies that when migrating to urban areas, larger number of family members move together (or follow each other) as opposed to migrants destined for rural areas.[17] Therefore, households with urban migrants are more likely to receive remittances because the combined earning ability of their migrants is greater. Furthermore, migrants destined for urban areas may have higher earning potential due to better initial conditions (at individual, household, and community levels), which further cements the inequality of outcomes with regards to the welfare impact of migration.

[17] This finding is consistent with evidence on migration networks in Ghana (e.g., Adams, Cuecuecha and Page, 2008).

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7. Tables

Table 1 Gender, age, and educational attainment of migrants and non-migrants

	Non-migrants (average)	Migrants (average)	t-statistic
Gender	1.53	1.46	5.77
Age	36.02	30.94	10.73
Complete primary	0.02	0.13	-7.86
Incomplete secondary	0.50	0.48	0.42
Complete secondary	0.34	0.08	6.36
Complete tertiary	0.07	0.02	2.43

Note: for gender, 1=male and 2=female. All averages are weighted by survey weights.

Table 2 Determinants of an individual's likelihood to be an internal migrant

VARIABLES	(1)	(2)	(3)
age	0.0223***	0.0203***	0.0205***
age^2	-0.000312***	-0.000271***	-0.000275***
male	0.0158	0.00503	0.0099
married	0.0939***	0.0532***	0.0560***
prim	0.0836***	0.0986***	0.0965***
seci	0.0683***	0.0818***	0.0731***
secc	0.173***	0.131***	0.113***
terc	0.287***	0.202***	0.167***
urb	-0.0305	-0.0354	-0.0523**
male_head	-0.102***		
age_head	0.00132***		
educ_head	-0.0145***		
mfrat	0.0670***		
hhsizem	0.0161***		
dep_child	-0.116***		
dep_elder	0.333***		
ownhouse	-0.0344***		
lit_clusH	-0.151***	-0.189***	
pay_clusH	-0.118*	-0.157*	
sni_clusH	-0.00989	-0.0349	-0.0813*
wtr_clusH	-0.0153	-0.0221	-0.0487*
Western	0.0625	0.0812*	0.103**
Central	0.137***	0.235***	0.284***
Volta	0.130***	0.203***	0.259***
Eastern	0.0522	0.130***	0.159***
Ashanti	0.149***	0.255***	0.290***
Brong_Ahafo	0.0692*	0.158***	0.195***
Northern	0.0648	0.131**	0.235***
Upper_East	0.00507	0.0397	0.125*
Upper_West	0.0973**	0.244***	0.346***
Observations	7677	7677	7677
Pseudo R^2	0.319	0.148	0.139

*** p<0.01, ** p<0.05, * p<0.1.

Note: Estimated coefficients are reported as marginal probabilities. Observations are weighted by sample weights and standard errors are clustered at the PSU level. Stratification at the region level is also taken into account in the estimates.

Table 3 Impact of migration on sending household's welfare

VARIABLES	(1)	(2)	(3)
male_head	-0.0236	-0.0391	-0.0867***
age_head	-0.0153***	-0.0114***	-0.0105**
age_head^2	7.53e-05	5.24e-05	6.39e-05
prim_head	-0.0356	-0.00302	-0.0236
seci_head	0.120***	0.134***	0.157***
secc_head	0.443***	0.436***	0.451***
terc_head	0.699***	0.720***	0.750***
married_head	0.0443	0.0409	0.0569*
hhsize	-0.0593***	-0.0591***	-0.0592***
dep_child	-0.450***	-0.360***	-0.354***
ownhouse	0.107***	0.122***	0.116***
ownfarm	-0.228***	-0.201***	-0.182***
selfemp	0.130***	0.144***	0.156***
urb	0.322***	0.300***	0.280***
lland	0.00774***	0.00917***	0.00905***
Western	0.0403	0.131*	0.150*
Central	-0.0235	0.0444	0.156**
Volta	-0.170*	-0.115	-0.0647
Eastern	0.0605	0.166**	0.185***
Ashanti	-0.0280	0.00881	0.103
Brong_Ahafo	-0.103	-0.0424	-0.0304
Northern	-0.165*	-0.117	-0.121
Upper_East	-0.496***	-0.520***	-0.549***
Upper_West	-0.876***	-0.708***	-0.777***
mstatus	0.708***		
migrurb		0.622***	
migrrur			0.252
ρ	-0.6096***	-0.5518***	-0.1997
Observations	3700	3700	3700

*** p<0.01, ** p<0.05, * p<0.1.

Note: Observations are weighted by sample weights and standard errors are clustered at the PSU level. Stratification at the region level is also taken into account in the estimates. Only the second stage estimates are shown; migration rate at the district level is the identifying variable in the first stage. The table reports untransformed value of ρ, although hypothesis testing was done on its inverse hyperbolic tangent (α tanh ρ).

Table 4 Determinants of likelihood to receive remittances and their amount

VARIABLES	(1) rflag	(2) rflag	(3) rflag	(4) lremit	(5) lremit	(6) lremit	(7) lremit
male_head	-0.787***	-0.764***	-0.811***	-2.451***	-2.389***	-2.532***	-2.068***
age_head	-0.0466**	-0.0459**	-0.0432**	-0.184***	-0.179***	-0.176***	-0.207***
age_head^2	0.000646***	0.000634***	0.000629***	0.00227***	0.00221***	0.00224***	0.00229***
prim_head	0.169	0.192	0.176	0.442	0.518	0.455	0.363
seci_head	0.0555	0.0535	0.0744	0.239	0.227	0.297	0.0556
secc_head	-0.328*	-0.342*	-0.315	-0.455	-0.477	-0.432	-0.465
terc_head	-0.696**	-0.699**	-0.656**	-1.375*	-1.381*	-1.290*	-1.618**
married_head	-0.135	-0.150	-0.130	0.0462	0.0132	0.0612	-0.0338
hhsize	-0.0663***	-0.0688***	-0.0678***	-0.227***	-0.229***	-0.230***	-0.236***
dep_child	0.305	0.365*	0.356	0.350	0.473	0.491	-0.171
ownhouse	-2.225***	-2.236***	-2.209***	-5.415***	-5.387***	-5.407***	-5.477***
ownfarm	0.524***	0.522***	0.539***	0.749**	0.742**	0.801**	0.439
selfemp	-0.0129	-0.0165	0.000282	-0.280	-0.280	-0.241	-0.421
urb	-0.301**	-0.293*	-0.321**	-0.522	-0.516	-0.578*	-0.272
lland	-0.00205	-0.00143	-0.00150	0.0110	0.0128	0.0124	0.00202
Western	0.736***	0.770***	0.787***	1.565***	1.659***	1.715***	0.933
Central	0.499*	0.472*	0.588**	1.039*	0.957	1.295**	0.0358
Volta	0.690***	0.682***	0.739***	1.673***	1.663***	1.815***	1.055
Eastern	0.113	0.143	0.176	0.450	0.554	0.612	-0.297
Ashanti	0.355*	0.307*	0.421**	0.802*	0.697	0.983**	0.0442
Brong_Ahafo	0.551**	0.577**	0.582**	1.144**	1.201**	1.237**	0.704
Northern	1.219***	1.262***	1.233***	2.723***	2.789***	2.775***	2.438***
Upper_East	0.547*	0.576**	0.511*	1.099*	1.111*	1.022	1.388*
Upper_West	1.543***	1.661***	1.555***	3.188***	3.453***	3.236***	2.338***
mstatus	0.356***			0.983***			5.035*
migrurb		0.769***			1.883***		
migrrur			0.289			0.800	
ρ							-0.4428
Observations	3700	3700	3700	3700	3700	3700	3700

*** p<0.01, ** p<0.05, * p<0.1.

Note: Observations are weighted by sample weights and standard errors are clustered at the PSU level. Stratification at the region level is also taken into account in the estimates. Specifications (1)-(3) were estimated with a logit model. For specification (7), only the second stage estimates are shown; migration rate at the district level is the identifying variable in the first stage, and the table reports untransformed value of ρ although hypothesis testing was done on its inverse hyperbolic tangent (α tanh ρ).

8. Figures

Figure 1 Migrants in the Ghanaian population

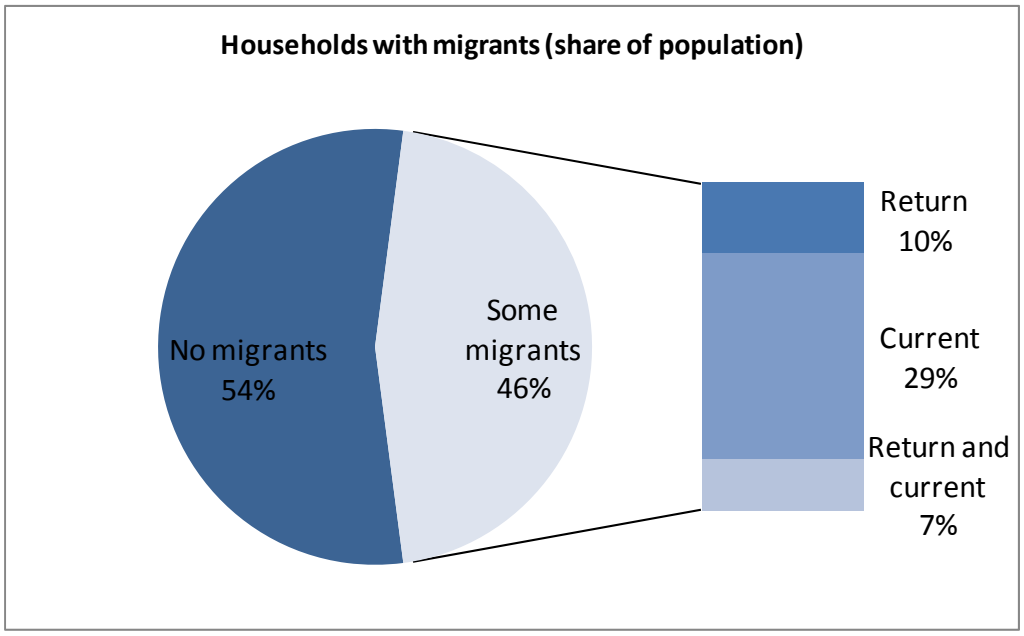

Figure 2 Regions of origin and destination for Ghanaian migrants

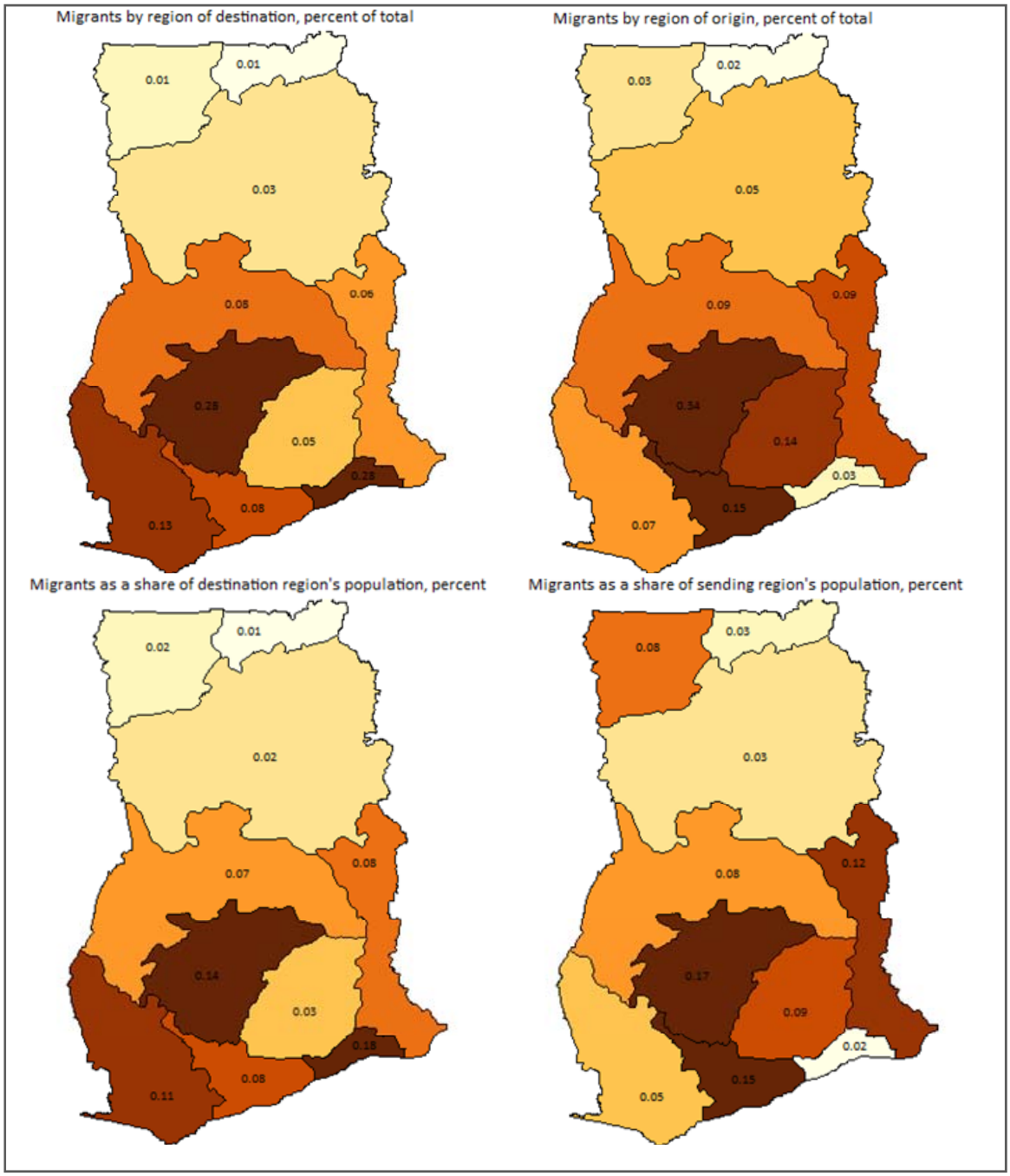

Figure 3 Remittances and household welfare

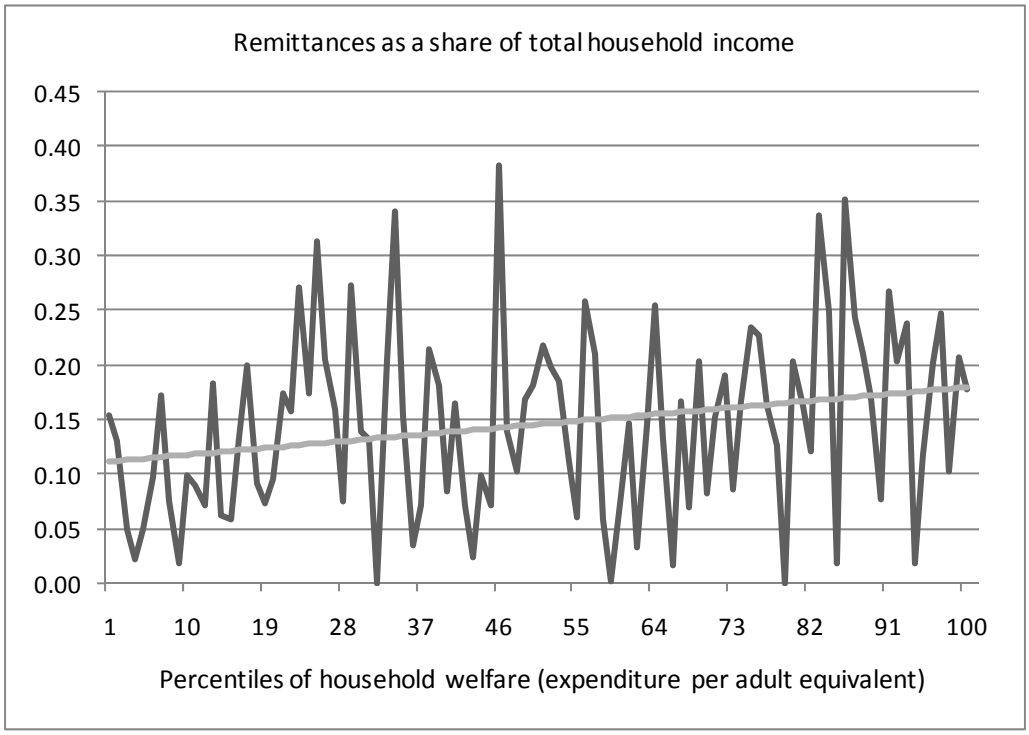

Figure 4 Distribution of households by presence of migrants and receipt of remittances

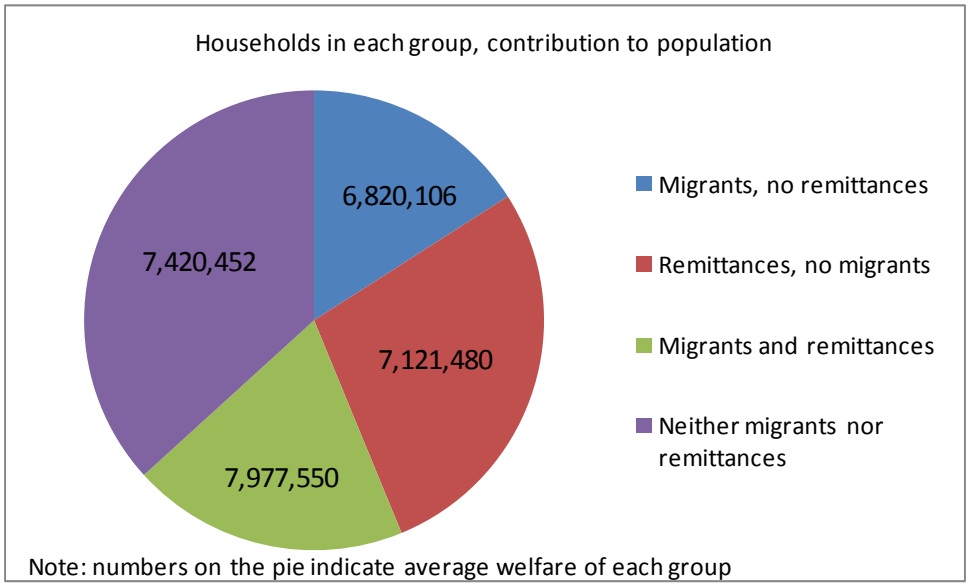

Figure 5 Contribution of push and pull factors to the likelihood of migration